

Life without antibiotics

December 2 2013, by Matthew Cooper



Infections were regarded as a matter of life and death before the development of antibiotics, and they may soon revert to that. Credit: Wikimedia Commons

Heralded as a "miracle of modern medicine" when they were first discovered, antibiotics have been overused for so long that most have become ineffective. Stories about superbugs (bacteria resistant to antibiotics) now feature regularly in the news.

This morning, it's about babies in a Melbourne hospital testing positive



for a bacteria that <u>antibiotics</u> can't beat.

And yesterday, it was about a man who had surgery for a hernia while travelling in India and became the first New Zealand national to contract Klebsiella pneumoniae, a <u>superbug resistant all current antibiotics</u>.

The substance of these articles, together with many other unreported stories, is a glimpse of what <u>life will be like without antibiotics</u>.

To divine the future, it has been said, we should first look to the past.

I was born in the late 1960s, halcyon days of the golden age of antibiotic discovery. To understand what life was like before antibiotics, I looked to my father, who was born in the late 1930s.

This was before Howard Florey, Alexander Fleming and Ernst Boris Chain developed penicillin.

My father's younger brother Warren died in 1943, when he was barely three years old. This was a time when war was threatening; houses had blackout paper on the windows and a bucket of sand in the hallway; streetlights and cars featured strange black shutters exuding emaciated, pale light.

My father's family lived in small brick cottage with an avid gardener neighbour on one side, and rambunctious blackberries on the other. There was plenty of fresh fruit and veggies to eat, as is the case today.





A sample of Klebsiella pneumoniae, which is resistant to all current antibiotics. Credit: Nathan Reading

Despite the war and the effects of rationing, Warren was a robust child in good health. Memory fades, but my father remembers his brother as a particularly happy and sunny little boy. Most friends and relatives had much the same opinion; he seemed to radiate something best described as joie de vivre.

His death was completely unexpected. Warren had what appeared to be a cold but within a day or so, it had become much worse. One night he had difficulty breathing with a high temperature.

Using a public phone, my grandfather and grandmother called the doctor. Warren was sent to the district hospital, but without antibiotics,



he died the following day.

Infections then were regarded as part of life and death. After antibiotics, they became avoidable but, sadly, they're now seen as trivial because the medicines are available to all.

Indeed, horses, dogs, cats, cattle, chicken, fish, and people are given antibiotics with little thought to the past, or our future.

And now, multidrug-resistant superbugs are here, and they're spreading. The antibiotic development pipeline is broken, because antibiotics have been sold for next to nothing and used to profligate excess in human and animal medicine. And they are used as "growth promoters" in our food chain.

So, what will life look like without antibiotics?

Young children, adolescents, adults, and the elderly will die from bacterial pneumonia, wounds, sepsis and bacteremia (blood infections) in numbers that will overload the health-care system.





Superbugs are bacteria that current antibiotics cannot defeat. Credit: Daniel Ross

Doctors, nurses and clinicians will be faced with decisions about whether to ablate the infected tissue (cut it off if possible), or move the patient to palliative care in isolation to minimise the risk of the superbug spreading to other patients.

Operations that involve any invasive procedure, from simple cannulas and catheters to hip replacement, and open-heart surgery will risk death from drug-resistant bacterial infection.

Interventions such as organ transplant and chemotherapy that compromise immunity will need to be carried out in high biosecurity facilities.

Antibiotics are one of the few medicines we have in which the choice of patient care for an individual directly affects the health of the community and subsequent generations.



More than 8,000 Australians die each year (150 a week) from untreatable sepsis or bacteremia. As our population ages and superbugs spread, this is expected to reach 16,000 per year, or 300 deaths a week by 2030.

To date, we have shown that we are unable to learn from the past. We continue to treat antibiotics as a commodity rather than a valuable medicine that benefits our community.

Sadly, this means we are standing by and watching the demise of one of our most effective cures against fatal disease.

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